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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/552,234

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Kenichiro Fujimoto

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EXAMINER

SAAD, ERIN BARRY

ART UNIT

PAPER NUMBER

1793

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/552,234	<b>Applicant(s)</b> FUJIMOTO ET AL.	
	<b>Examiner</b> ERIN B. SAAD	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 14-27, 42, 43, 73 and 74 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-27, 42, 43, 73 and 74 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 14-27 and 73-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frampton (US3969274, of record).

In regards to claims 14-15, Frampton teaches a catalyst comprising an active catalytic material and a preformed support, wherein the active catalytic material is a metal, salt, oxide, acid, alloy, or heteropolyacid of an element of Groups IB, IIB, IVB, V, VIB, VIIB and VIII of the Periodic Table of Elements and where the support is a steam treated silica xerogel (see Frampton Claim 1). The reference specifically teaches the use of the following as active catalytic materials: Cu, Ag, Au, Zn, Cd, Hg, Ti, Bi, Sb, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Re, N, P, As, Fe, Co, Ni, Ru, Os, Ir, Rh, Pd, and Pt (see Frampton column 4, lines 40-52). Frampton further teaches the xerogel support to have a composition of SiO<sub>2</sub> over 99 wt%, Fe<sub>2</sub>O<sub>3</sub> 0.01-0.03 wt%, Na<sub>2</sub>O 0.02-0.09 wt%, and Al<sub>2</sub>O<sub>3</sub> less than 0.4 wt% (see Frampton claim 2). Thus, Frampton teaches a catalyst comprising 0.02-0.09 wt% (equivalent to mass%) of an alkali metal.

It would have been obvious to one of ordinary skill in the art to select from the portion of the overlapping compositional ranges. Overlapping ranges have been held to

establish prima facie obviousness (see MPEP 2144.05). It would have been further obvious to one of ordinary skill in the art to select cobalt (Group VIII metal) as a catalytic material from the disclosed teachings.

In regards to the limitation “has a characteristic that facilitate a production of hydrocarbon from a syngas in a slurry bed”, this is considered a statement of intended use. While intended use recitations cannot be entirely disregarded, the intended use must result in a structural difference between the claimed invention and the prior art in order to distinguish the claimed invention over the prior art. The prior art in this case, teaches a catalyst useful for the production of hydrocarbons (see col 4, ln 53-68) and therefore meets the instant claims.

In regards to claims 16-17, Frampton teaches the xerogel support to have a pore volume of 0.4-2.2 mL/g, surface area 20-800 m<sup>2</sup>/g (see Frampton claim 2) and a specific example of a silica xerogel support having an average pore diameter of 12 nm, pore volume of 1.04 mL/g, and surface area of 350 m<sup>2</sup>/g (see Frampton example 1). It would have been obvious to one of ordinary skill in the art to select from the portion of the overlapping ranges. Overlapping ranges have been held to establish prima facie obviousness (see MPEP 2144.05).

In regards to claims 18-20, as Frampton teaches a catalyst with substantially the same composition and structure (see above), it would necessarily follow that it possess the same properties as instantly claimed.

In regards to claims 73-74, as Frampton teaches a catalyst with substantially the same composition and structure (see above), it would necessarily follow that it possess the same properties as instantly claimed.

3. Claims 21-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frampton (US3969274, of record) as applied to claim 14-20 above, and further in view of Luo et al. (2002/0065378).

Regarding claims 21-27, Frampton does not disclose that the silica has a diameter in the range of *approximately* 20-250 microns. However, Luo discloses having a support with silica particles with a size of 10-100 microns (paragraph 0007). It would have been obvious to one of ordinary skill in the art to select from the portion of the overlapping compositional ranges. Overlapping ranges have been held to establish prima facie obviousness (see MPEP 2144.05). It would have been further obvious to one of ordinary skill in the art to select a silica particle size that would be suitable for the catalyst.

4. Claims 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frampton (US3969274, of record) in view of Fiato et al. (US4544674).

In regards to claims 42-43, teaches adding a group VIII metal in the form of a precursor comprising an alkali metal (col 5, ln 10-60), but does not specifically teach cobalt added in a the form of a cobalt precursor containing at most 5% alkali or alkaline-earth metal.

Fiato teaches the formation of a catalyst comprising a precursor solution of cobalt, iron (Group VIII metals) and 1% potassium (alkali metal) (see col 7, ln 53-60).

It would have been obvious to one of ordinary skill in the art to modify the teachings of Frampton to select a precursor solution comprising cobalt and 1% potassium as taught by Fiato, in order to enhance the catalytic activity of the material, and increase the industrial applicability of the invention.

5. Claims 14-15, 18-19, 21-22 and 73-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheffer et al. (US5073661).

In regards to claims 14-15, Scheffer teaches a catalyst for the preparation of hydrocarbons, comprising a porous carrier material selected from silica, alumina and mixtures thereof, cobalt, and a promoter such as magnesium (see col 2, ln 28-38). Scheffer teaches the addition of 3-300 parts by weight of cobalt and 0.01-100 parts per weight promoter per 100 parts by weight carrier material (see col 2, ln 49-63). Thus, the reference teaches a catalyst comprising compositional ranges which overlap with the instant claims. It would have been obvious to one of ordinary skill in the art to select from the portion of the overlapping compositional ranges. Overlapping ranges have been held to establish prima facie obviousness (see MPEP 2144.05).

In regards to the limitation “has a characteristic that facilitate a production of hydrocarbon from a syngas in a slurry bed”, this is considered a statement of intended use. While intended use recitations cannot be entirely disregarded, the intended use must result in a structural difference between the claimed invention and the prior art in

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order to distinguish the claimed invention over the prior art. The prior art in this case, teaches a catalyst useful for the production of hydrocarbons and therefore meets the instant claims.

In regards to claims 18-19, as Scheffer teaches a catalyst with substantially the same composition and structure (see above), it would necessarily follow that it possess the same properties as instantly claimed.

Claims 21-22 further require the support to be silica with a spherical shape. Scheffer teaches a spherical silica support (see col 5, ln 19-21).

In regards to claims 73-74, as Scheffer teaches a catalyst with substantially the same composition and structure (see above), it would necessarily follow that it possess the same properties as instantly claimed.

6. Claims 16-17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheffer as applied to claims 14 and 15 above, and further in view of Frampton (US3969274, of record).

In regards to claims 16-17, Scheffer teaches a catalyst with a support comprising spherical silica, alumina, or mixtures thereof but does not teach the average surface or porosity of the support.

Frampton teaches a catalyst comprising a Group VIII and silica support made up of elementary spherical particles, having a pore volume of 0.4-2.2 mL/g, surface area 20-800 m<sup>2</sup>/g (see Frampton claim 2) and a specific example of a silica xerogel support

having an average pore diameter of 12 nm, pore volume of 1.04 mL/g, and surface area of 350 m<sup>2</sup>/g (see Frampton example 1).

It would have been obvious to one of ordinary skill in the art to substitute the support as taught by Scheffer with that taught by Frampton in order to enhance the porosity and catalytic activity of the invention, thus increasing the industrial applicability of the invention. It would have further been obvious to one of ordinary skill in the art to select from the portion of the overlapping ranges. Overlapping ranges have been held to establish prima facie obviousness (see MPEP 2144.05)

In regards to claim 20, as the references teach a catalyst with substantially the same composition and structure, it would necessary follow that it possess the same properties as instantly claimed.

7. Claims 21-22 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheffer et al. (US5073661) as applied to claims 14-15 and 18-19 above, and further in view of Luo et al. (2002/0065378).

Regarding claims 21-22 and 25-26, Frampton does not disclose that the silica has a diameter in the range of *approximately* 20-250 microns. However, Luo discloses having a support with silica particles with a size of 10-100 microns (paragraph 0007). It would have been obvious to one of ordinary skill in the art to select from the portion of the overlapping compositional ranges. Overlapping ranges have been held to establish prima facie obviousness (see MPEP 2144.05). It would have been further obvious to



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one of ordinary skill in the art to select a silica particle size that would be suitable for the catalyst.

8. Claims 23-24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheffer et al. (US5073661) and Frampton (US3969274, of record) as applied to claim 14-20 above, and further in view of Luo et al. (2002/0065378).

Regarding claims 21-22 and 25-26, Frampton does not disclose that the silica has a diameter in the range of *approximately* 20-250 microns. However, Luo discloses having a support with silica particles with a size of 10-100 microns (paragraph 0007). It would have been obvious to one of ordinary skill in the art to select from the portion of the overlapping compositional ranges. Overlapping ranges have been held to establish prima facie obviousness (see MPEP 2144.05). It would have been further obvious to one of ordinary skill in the art to select a silica particle size that would be suitable for the catalyst.

### ***Response to Arguments***

9. Applicant's arguments filed 4/13/2009 have been fully considered but they are not persuasive.

10. The Applicant argues that independent claims 14-15 disclose a catalyst that *characteristics that facilitate a production of hydrocarbon from a syngas in a slurry bed.*

This limitation is considered intended use and does not further limit the composition of the catalyst. While intended use recitations cannot entirely be disregarded, in composition and article claims, the intended use must result in structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention over the prior art. It is in the position of the examiner that the prior art structure is capable of performing the intended use and therefore meets the instant claims (MPEP 2111.02).

11. Applicant argues that Frampton does not teach a catalyst comprising 0.01-0.07 mass% alkali metal or alkaline earth metal.

This is not found persuasive. Frampton teaches a compositional range in weight% (equivalent to mass%, see details in rejection above) which clearly overlaps with the instantly claimed ranges. Thus, it would have been obvious to one of ordinary skill in the art to select from the portion of the overlapping ranges. Overlapping ranges have been held to establish prima facie obviousness (see MPEP 2144.05).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., reaction activity, CO conversion) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

12. The Applicant argues that Frampton, Scheffer and Fiato do not disclose having the CO conversion is 40% or more when using cobalt on the catalyst support.

The Examiner disagrees. Since the Prior Art teaches a catalyst with substantially the same composition and structure (see above), it would necessarily follow that it possess the same properties as instantly claimed, and therefore would have a CO conversion of 40% or more.

### ***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIN B. SAAD whose telephone number is (571)270-3634. The examiner can normally be reached on Monday through Thursday from 8am-5pm Eastern time.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on (571) 272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. B. S./  
Examiner, Art Unit 1793  
6/15/2009

/Jessica L. Ward/  
Supervisory Patent Examiner, Art Unit 1793